LAW OFFICES
DENNISON, SCHULTZ, DOUGHERTY & MACDONALD
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REMARKS

This amendment is filed concurrently with a Request for Continued Examination and a Petition for Extension of Time.

Applicants have amended claims 1 and 8 to clarify the operation of the invention, as discussed in the present specification at page 8, lines 19-29. Thus, when a deposit is present inside a pipe, it serves as insulation between the pipe wall and the fluid flowing through the pipe.

According to the invention, a thermal gradient is applied to the outer surface of the pipe in a first, active zone, and heat flux is measured on the outer surface of the pipe in a zone at a given longitudinal distance. If no deposit is present, the thermal gradient applied to the pipe will be transmitted both to the pipe wall and to the fluid flowing through the pipe, and the heat flux measured will be limited. However, when an insulating deposit is present, the thermal gradient will be transmitted substantially to the pipe wall rather than to the wall and the fluid, and a larger heat flux will be measured on the pipe wall in the second zone.

Claims 1, 3 through 9 and 11 have been rejected under 35 USC 102(b) as anticipated by Hausler, and claims 2 and 10 have been rejected under 35 USC 103 over Hausler in view of Ludington et al.

Hausler does not disclose the claimed process or apparatus, and the apparatus disclosed by Hausler is not capable of performing the claimed process.

Hausler discloses three thermocouples disposed axially across a fluid transport pipe. A section of pipe is removed and replaced by an isolated new pipe wall section which is heated on its outside surface. A first thermocouple

14 measures heat on the outside surface of the pipe section, a second thermocouple 15 measures heat on the inside surface of the pipe section, and a third thermocouple 20 measures heat within the flowing liquid. The presence of a deposit is determined by comparing the heat flux through the pipe wall section using thermocouples 14 and 15, and the heat flux between the inner surface of the pipe and the fluid, measured by thermocouples 15 and 20.

The claimed invention determines the presence of a deposit by measuring heat flux *along the outer surface of the pipe wall*. Hausler does not teach doing this. Indeed, the only thermocouple disposed by Hausler on the outside of the pipe wall is disposed directly within the heating zone, with heat transmitted directly to the thermocouple. Hausler does not teach any method for determining a deposit using only a thermocouple on the outer pipe wall; rather, Hausler requires a thermocouple on the inner pipe wall and a thermocouple in the flowing fluid to determine a deposit.

The method and apparatus of Hausler are therefore more complicated than those of the claimed invention. Hausler requires thermocouples disposed on the inside wall of the pipe and within the flowing fluid, and thus requires that a section of pipe be removed. No such arrangement is necessary according to the claimed invention, in which both the thermal gradient source and the measuring device are disposed on the outer surface of the pipe.

Moreover, because the Hausler pipe section is isolated from the remainder of the pipe (by insulating material 4, col. 5, lines 14-21), it is designed to prevent measuring the effects of heat flux along the pipe wall; Hausler wants to measure heat flux only through the pipe wall.

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To the contrary, the claimed invention measures heat flux along the pipe wall to determine if heat is transmitted substantially by the wall (due to insulating deposits), or by the wall and the fluid.

Withdrawal of the rejections of record is requested.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,

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